

REMARKS

This application has been reviewed in light of the Office Action dated September 10, 2004. Claims 1-3, 5-11, 14, 16, and 18-37 are presented for examination, of which Claims 1, 8, 9, 22, and 25 are in independent form. Claims 4, 12, 13, 15, and 17 have been canceled, without prejudice or disclaimer of subject matter. Those claims will not be further addressed herein. Recitations substantially along the lines of those set forth in Claim 4 have been incorporated into Claims 1 and 22, and recitations substantially along the lines of those set forth in Claim 12 have been incorporated into Claims 9 and 25. Claims 1-3, 5-11, 14, 16, 18-25, and 27-34 have been amended to define more clearly what Applicants regard as their invention. Favorable reconsideration is requested.

Applicants note with appreciation the indication that Claims 28/26, 30/29, 31-34, and 37 would be allowable if rewritten so as not to depend from a rejected claim, and with no change in scope. These claims have not been so rewritten because, for the reasons given below, the respective base claims from which they depend are believed to be allowable.

The Office Action at page 2 objected to Claims 2 and 3 on the grounds stated.

Applicants have amended these claims to overcome the noted objection. Accordingly, Applicants submit that the objection has been obviated, and respectfully request its withdrawal.

Claims 27 and 28 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite, and "Claims 29-34 [were] rejected as [being] dependent upon rejected Claims 27 and 28 under 35 U.S.C. § 112."

Claims 27 and 28 have been carefully reviewed and amended as deemed necessary to ensure that they and Claims 29-34 conform fully to the requirements of Section 112, second paragraph, with special attention to the points raised in paragraphs 4 and 5 of the Office. It is believed that the rejections under Section 112, second paragraph, have been obviated, and their withdrawal is therefore respectfully requested.

Claims 1-3 and 22-24 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,144,447 (*Akimoto*); Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Akimoto*, in view of U.S. Patent No. 4,835,617 (*Todaka*) and further in view of U.S. Patent No. 5,920,070 (*Petrick*); Claim 7 was rejected under Section 103(a) as being unpatentable over *Akimoto*, in view of *Petrick*; Claim 8 was rejected under Section 103(a) as being unpatentable over U.S. Patent No. 4,621,291 (*Takemoto*), in view of *Petrick*; Claims 9-11, 14, 18, 20, and 25 were rejected under Section 103(a) as being unpatentable over *Takemoto*, in view of *Todaka* and further in view of *Petrick*; Claim 16 was rejected under Section 103(a) as being unpatentable over *Takemoto*, in view of *Todaka* in view of *Petrick* and further in view of *Akimoto*; Claim 19 was rejected under Section 103(a) as being unpatentable over *Takemoto* and *Todaka* in view of *Petrick* and further in view of U.S. Patent No. 6,005,238 (*Mei*); Claim 21 was rejected under Section 103(a) as being unpatentable over *Takemoto* and *Todaka* in view of *Petrick* and further in view of U.S. Patent No. 6,475,824 (*Kim*); Claims 26/25, 27/26, and 29/27 were rejected under Section 103(a) as being unpatentable over *Takemoto* and *Todaka* in view of *Petrick* and further in view of U.S. Patent No. 5,886,353 (*Spivey*); and Claims 35 and 36 were rejected under Section 103(a) as being unpatentable over *Takemoto* and *Todaka*, in view of *Petrick* and further in view of U.S. Patent No. 6,172,369 (*Waechter*).

As shown above, Applicants have amended independent Claims 1, 8, 9, 22, and 25 in terms that more clearly define what they regard as their invention. Applicants submit that these amended independent claims, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

The rejection of independent Claims 1 and 22 over *Akimoto* will first be addressed.

The aspect of the present invention set forth in Claim 1 is an area sensor. The sensor includes plural pixels, each having a switching element, arranged two-dimensionally, and plural common lines which are connected to the switching elements corresponding to the plural pixels which are arrayed in a direction. The plural driving means, connected to the plural common lines, apply a control signal to the plural common lines in order to drive the switching element of each of the plural pixels. In order to allow the plural driving means to be driven at the same time, the plural driving means has a start signal input section for starting the plural driving means.

Among other important features of Claim 1 is that in order to allow the plural driving means to be driven at the same time, the plural driving means has a start signal input section for starting the plural driving means.

Akimoto relates to a solid-state image device having pixel amplifiers. In the first embodiment of *Akimoto*, Y driver circuits or vertical shift registers YDC and YDC2 are respectively connected to opposite ends of each of the power supply lines 5. The power supply lines 5 are driven by the Y driver circuits YDC and YDC2 on the left and right sides with substantially the same clock.

The Office Action alleges that *Akimoto* discloses that in order to allow the plural driving means to be driven at the same time, the driving means has a start signal input section for starting the driving function of the plural driving means. The Office Action cites column 5, lines 9-11, as support for this assertion.¹ Applicants respectfully disagree.

The cited passage of *Akimoto* states merely that the power supply lines 5 are driven by the Y driver circuits YDC and YDC2 on the left and right sides with substantially the same clock. However, nothing has been found in *Akimoto* that would teach or suggest that in order to allow the plural driving means to be driven at the same time, the plural driving means have a start signal input section for starting the plural driving means, as recited in Claim 1.

For at least the above reason, Applicants submit that Claim 1 is clearly patentable over *Akimoto*.

Independent Claim 22 is a method claim corresponding to sensor Claim 1, and is believed to be patentable over *Akimoto* for at least the same reasons as discussed above in connection with Claim 1.

The rejection of Claim 8 over *Takemoto*, in view of *Petrick* will now be addressed.

The aspect of the present invention set forth in Claim 8 is an area sensor. The sensor includes plural pixels, each having a thin-film transistor and a photoelectric conversion element, arranged two-dimensionally, and plural common source lines which

¹/See, e.g., page 3 of the Office Action, addressing Claim 4. As pointed out above, Claim 4 has been cancelled and recitations along the lines of those set forth in the claim have been incorporated into Claim 1.

are connected to the source electrodes of the thin-film transistors which are arrayed in a direction. The plural signal reading means are connected to the plural common source lines, and signal reading is performed, at the same timing, by the plural signal reading means.

Among other notable features of Claim 8 is that signal reading is performed, at the same timing, by the plural signal reading means.

Takemoto relates to an area imaging device having an array of picture elements formed of photodiodes and insulated-gate MOSTs. The array is vertically scanned by a shift register and horizontally scanned by a charge transfer device (CTD). The imaging device has a transfer MOST provided between a vertical signal output line and a horizontal switch MOST, a resetting MOST connected to the junction between the transfer MOST and the horizontal switch MOST, and a mechanism for setting the vertical signal line at a reference potential just before signal transfer. The transfer MOST connected between the junction of the horizontal switch MOST and the resetting MOST and the vertical signal line is a double-gate MOST formed by a connection of transfer gates in series. Thus, the charges under the gate and the transfer MOST can be removed, reducing the fixed noise.

Takemoto discusses at column 2, lines 5-37, that a charge transfer device (CTD) operates in the horizontal scanning period to transfer each signal to the output stage, and, at the same time, constant bias charges are transferred in turn from the input device. At the end of the horizontal scanning period, all the signals have been read and a constant amount of charge exists at each stage of the CTD. However, Applicants have found nothing in *Takemoto* that would teach or suggest that signal reading is performed, at the same timing, by the plural signal reading means, as recited in Claim 8.

For at least the above reason, Applicants submit that Claim 8 is clearly patentable over *Takemoto*, taken alone.

Petrick relates to a large area solid state x-ray detector employing a number of photodiodes that are charged electrically and then discharged by exposure to the x-rays. Applicants submit that *Petrick* is not seen to remedy the deficiencies of *Takemoto* with respect to teaching or suggesting that signal reading is performed, at the same timing, by the plural signal reading means, as recited in Claim 8.

Therefore, even if *Takemoto* and *Petrick* were to be combined in the manner proposed in the Office Action, assuming such combination would even be permissible, the resulting combination also would fail to teach or suggest at least those features of Claim 8.

Accordingly, Applicants submit that Claim 8 is clearly patentable over *Takemoto* and *Petrick*, whether considered separately, or in any permissible combination.

The rejection of Claim 9 over *Takemoto*, in view of *Todaka* and further in view of *Petrick* will now be addressed.

The aspect of the present invention set forth in Claim 9 is an area sensor. The sensor includes plural pixels, each having a thin-film transistor and a photoelectric conversion element, arranged two-dimensionally, plural common gate lines, connected to the gate electrodes of the thin-film transistors, which are arrayed in one direction, and plural common lines, connected to the source or drain electrodes of the thin-film transistors, which are arrayed in another direction. The plural signal reading means are connected to the plural common lines, and plural gate driving means are connected to the plural common gate lines, and signal reading is performed, at the same timing, by each of the plural signal reading means. As noted previously, the recitations of Claim 12, signal

reading is performed, at the same timing, by each of the plural signal reading means, has been incorporated into Claim 9.

Among other important features is that signal reading is performed, at the same timing, by each of the plural signal reading means.

The teachings of *Takemoto* and *Petrick* were described above.

Todaka relates to an image pickup device for television cameras, which performs a shutter function. In the *Todaka* apparatus, reading horizontal and vertical scanning circuits and a resetting vertical scanning circuit are connected to an image sensor including a plurality of photodiodes arranged in a matrix form. The resetting vertical scanning circuit generates vertical scanning pulses prior to the scanning of the reading vertical scanning circuit by a shutter time T_s .

The Office Action cites (apparently) *Takemoto* at column 2, lines 5-37, as disclosing that signal reading is performed, at the same timing, by each of the plural signal reading means.² However, for reasons substantially similar as those discussed above in connection with Claim 8, Applicants have found nothing in *Takemoto* that would teach or suggest that signal reading is performed, at the same timing, by each of the plural signal reading means, as recited in Claim 9.

Further, Applicants submit that *Petrick* is not seen to remedy the deficiencies of *Takemoto*.

Still further, Applicants have found nothing has been found in *Todaka* that would teach or suggest that signal reading is performed, at the same timing, by each of the

²/See, e.g., page 9 of the Office Action, addressing Claim 12. As pointed out above, recitations along the lines of those from Claim 12 have been incorporated into Claim 9.

plural signal reading means, as recited in Claim 9. Indeed, both *Todaka* and *Petrick* are cited in the Office Action for allegedly teaching other features of Claim 9.

Therefore, even if *Takemoto*, *Petrick*, and *Todaka* were to be combined in the manner proposed in the Office Action, assuming such combination would even be permissible, the resulting combination also would fail to teach or suggest at least those features of Claim 9.

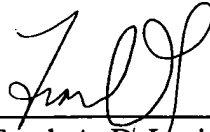
Accordingly, Applicants submit that Claim 9 is clearly patentable over *Takemoto*, *Petrick*, and *Todaka*, whether considered separately, or in any permissible combination.

Independent Claim 25 includes features substantially similar as those discussed above in connection with Claim 9. Accordingly, Claim 25 is believed to be patentable over *Takemoto*, *Petrick*, and *Todaka* for reasons substantially similar as those discussed above in connection with Claim 9.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Frank A. DeLucia', written over a horizontal line.

Frank A. DeLucia
Attorney for Applicants
Registration No.: 42,476

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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